

Amendment under 37 C.F.R. § 1.114(c)  
USSN 09/674,661

### **REMARKS**

In this Amendment, claims 15 and 25 are amended. After entry of this Amendment, claims 15-27, 29 and 30 will be pending in the application.

Claims 15 and 25 have been amended to refer to a “carbon black product” rather than a “solid carbonaceous product.” This amendment is supported by the specification at page 3, last line, and page 13, third full paragraph.

No new matter has been introduced.

Entry of this Amendment is respectfully requested.

### **Response to Rejection Under 35 USC §112, First Paragraph**

At page 2 of the Office Action, the Examiner rejects claims 15-27, 29 and 30 under 35 USC § 112, first paragraph, as not being adequately enabled by the specification.

Specifically, the Examiner contends that the specification, while being enabling for making carbon black, does not reasonably provide enablement for producing a solid carbonaceous product, as this would include making fullerenes.

Applicants have amended the claims to refer to carbon black rather than a solid carbonaceous product. Thus, it is believed that this rejection is rendered moot.

Withdrawal of this rejection is respectfully requested.

### **Claim Rejection Under 35 USC §103(a) Over Lynum**

At page 2 of the Office Action, the Examiner rejects claims 15-27, 29 and 30 under 35 USC § 103(a) as being obvious over Lynum (US Patent 5,527,518).

Specifically, the Examiner contends that Lynum teaches making carbon black by heating hydrocarbons in a flame, and recycling the hydrogen to burn for heat.

While the Examiner admits that Lynum does not teach the recited formula, the Examiner believes that both the present invention and the process of Lynum make carbon black.

#### **Claim Rejection Under 35 USC §§ 102(b)/103(a) Over Morgan**

At page 2 of the Office Action, the Examiner rejects claims 15-21, 23-26, 29 and 30 under 35 USC § 102(b) as anticipated by, or in the alternative, under 35 USC § 103(a) as obvious over Morgan et al. (US Patent 3,619,140).

Specifically, the Examiner contends that Morgan teaches making a hot flame and burning oil at substoichiometric oxygen levels to make carbon black.

While the Examiner admits that Morgan does not teach the recited formula, the Examiner believes that the claimed process and that of Morgan produce the same product.

#### **Examiner's Response to Applicants' Remarks Filed September 29, 2004**

The Examiner states that Applicants' remarks confuse the combustion to form the flame versus that used to form the carbon black. The Examiner contends that both Lynum and Morgan, as well as the present claims, form a flame using oxygen then use a substantially oxygen-free pyrolysis/decomposition to make the carbon black product. The Examiner believes that the carbon black product produced by the presently claimed method is the same as that produced by the methods of Lynum and Morgan. Further, the Examiner states that combustion calculations should be in declaration form, that the electricity used by Lynum is irrelevant, and that the claims do not exclude quenching.

### **Response to Claim Rejections**

Initially, it is noted that the Examiner is distilling the claimed invention down to a “gist,” and ignoring explicit limitations in the claims. This is not legally permissible as set forth in the MPEP at section 2142.02. Therefore, the Examiner is respectfully requested to find all limitations of the claims in the prior art, and for limitations not found in the prior art (e.g. “a C:O stoichiometric ratio greater than 1:0.4” and “said solid carbon black product has a C:H stoichiometric ratio of greater than 2.5:1”), the Examiner is requested to specifically point out how these limitations are anticipated or rendered obvious by the prior art. In fact, at page 2 of the Office Action, the Examiner admits that neither Lylum nor Morgan teaches these limitations.

Further, the Examiner appears to be examining the claims as if directed to the product. However, as claims 15-24, 26-27, and 29-30 are directed to methods of producing the product, patentability of these claims does not necessarily rely on the novelty and non-obviousness of the product itself. While Applicants show in the attached declaration that the product produced by the presently claimed method and the products produced by the methods of Lylum and Morgan, are different, other aspects of the claimed method (such as the ability to control the process and energy efficiency), are relevant to patentability.

### Response to Rejection Over Lylum et al.

It is respectfully submitted that Lylum does not teach forming a flame using oxygen to achieve substantially oxygen-free pyrolysis/decomposition, as asserted in the Office Action at page 3. Lylum teaches the use of a plasma torch, wherein the plasma gas is hydrogen (column 5, line 25). Therefore, according to the teachings of Lylum, no oxygen is present in the flame generated, or in the feed stock, which is methane and/or natural gas. Coupled with the fact that Lylum refers

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only to pyrolytic decomposition, it is evident that oxygen is not present in the method of Lynum as otherwise some combustion would be expected.

Thus, it is respectfully submitted that Lynum does not teach or suggest the use of oxygen when heating a hydrocarbon fuel and flame fuel as recited in the present claims.

Further, while the claims do not exclude the possibility of quenching, as the Examiner notes at page 3 of the Office Action, Lynum only suggests the use of oxygen once carbon black has been formed, and full decomposition has taken place (see column 5 lines 45-48 of Lynum). Thus, the oxygen described in Lynum is not in contact with the hydrocarbon fuel or flame fuel, as recited in the present claims.

See the attached Declaration Under 37 CFR § 1.132 by the present inventors, further describing these and other differences between the presently claimed method and that of Lynum, and describing various desirable features that flow from the presently claimed method. For example, according to the presently claimed method, the carbon black product has a smaller particle size which can be of considerable value in conductor and pigment industries, and the process has advantages in controllability as well as energy efficiency.

An unexecuted copy of the declaration is being filed herewith, and an executed copy will be filed in due course to complete the record.

Withdrawal of this rejection is respectfully requested.

Response to Rejection Over Morgan et al.

The Examiner maintains that Morgan also uses a flame with oxygen followed by substantially oxygen-free pyrolysis/decomposition. The Examiner requests that any combustion calculations relied upon be presented in declaration form.

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Independent claim 15 recites "heating a hydrocarbon fuel comprising bulk feedstock fuel and flame fuel in the presence of oxygen at a C:O stoichiometric ratio greater than 1:0.4."

The attached Declaration calculates the amount of C:O used in the process of Morgan and illustrates that oxygen is used at a level 4 times greater than the maximum level allowed according to the present claims (Morgan uses a C:O stoichiometric ratio of 1:1.6 or 1:1.7).

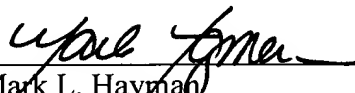
Moreover, Morgan et al. does not teach or recognize any benefit of a reduction in oxygen, such as to achieve greater yield, greater energy efficiency or an improved product, as also described in the declaration.

Withdrawal of this rejection is respectfully requested.

#### **Conclusion**

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

  
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WASHINGTON OFFICE

**23373**

CUSTOMER NUMBER

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